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TITLE : SURFACE COATING HARD METAL-MADE CUTTING TOOL EXCELLENT IN SURFACE LUBRICATION RELATING TO CHIP

ABSTRACT : PROBLEM TO BE SOLVED: To improve surface lubrication relating to chips.

SOLUTION: This surface coating hard metal-made cutting tool, formed by chemically evaporating and/or physically evaporating in a mean layer thickness of 3 to 30  $\mu\text{m}$  a hard coating layer constituted by a lower layer of a Ti compound layer consisting of one or two or more kinds of basically layers of TiC, TiN, TiCN, TiCO, or TiCNO and an upper layer of Al<sub>2</sub>O<sub>3</sub> layer on a surface of a WC group sintered hard metal base body, has a mean layer thickness of 0.1 to 3  $\mu\text{m}$  thickness as the most surface bedding layer in addition to the hard coating layer. In the case of representing by compositional formula TiO<sub>v</sub>, the tool has a Ti oxide layer satisfying V: 1.2 to 1.7 by atomic ratio relating to Ti and a mean layer thickness of 0.05 to 2  $\mu\text{m}$  similarly as the most surface layer, and in the case of representing by compositional formula TiC<sub>x</sub>N<sub>y</sub>(O)<sub>z</sub> (where (O) represents diffusion oxygen from the most surface bedding layer) the tool is formed by chemically evaporating and/or physically evaporating a Ti carbonitroxide layer satisfying X: 0.25 to 0.65, Y: 0.25 to 0.65, z: 0.01 to 0.4, x+y+z=1 by atomic ratio respectively relating to Ti.

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